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Response to Office Action Mailed 01/13/2006

REMARKS

A review of the claims indicates that:

A) Claims 10, 17, 18, 21—24, 26—28, and 30—33 remain in their original form.

B) Claims 1—9, 11—16, 19, 20, 25, 29, 34 and 35 are currently amended.

In view of the following remarks, Applicant respectfully requests reconsideration of the rejected claims.

Traversal of the §102 Rejections

Claims 1—5, 7—10, 14—18, 34 and 35 were rejected under §102 as being anticipated by U.S. Patent No. 5,565,864, hereinafter "Ohno." In response, the Applicant respectfully traverses the rejection.

Claim 1 recites, as amended, an encoding system for determining position and position changes of a moving member, comprising:

- a sequence of encoder marks forming incremental patterns and at least one index pattern, wherein two subsequent incremental patterns are indicative of an incremental position-change of the moving member and the index pattern is indicative of a reference position of the moving member;
- a sensor configured to view a section of the encoder-mark sequence, wherein the viewed section of the encoder-mark sequence carries redundant incremental position-change information at least in regions not disturbed by the index pattern; and
- an analyzer arranged to analyze an encoder-mark pattern in the viewed section with regard to the incremental patterns and the index pattern and to generate, in response to a pattern match found, an incremental-position-change signal and an index signal.

The Applicant notes that the Ohno reference does not disclose redundant incremental position-change information at least in regions not disturbed by the

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1 index pattern. Instead, Ohno discloses that a counter counts elements sensed by
2 the sensor, and thereby establishes a relative position based on the absolute
3 position (see column 6, lines 19—24). Accordingly, if the sensor misses one of
4 the elements, the counter will not advance.

5 The Patent Office has not cited Ohno as an example of use of redundant
6 incremental position-change information.

7 Thus, the Applicant's recited encoder mark sequence having redundant
8 incremental position-change information is structurally different from the
9 technology disclosed by Ohno. Additionally, the redundant information provides
10 the Applicant's claimed encoding system a functional advantage not seen by
11 Ohno, in that 'dropped' or missed mark elements do not result in an erroneous
12 relative position calculation.

13 Thus, the Applicant respectfully asserts that Ohno does not disclose the
14 elements recited, and that the §102 rejection of Claim 1 is therefore improper.
15 Accordingly, the Applicant respectfully requests that the §102 rejection of Claim 1
16 be removed, and that Claim 1 be allowed to issue, as amended.

17 Claims 2—6 depend from Claim 1 and are allowable due to their
18 dependence from an allowable base claim. These claims are also allowable for
19 their own recited features that, in combination with those recited in Claim 1, are
20 neither disclosed nor suggested in references of record, either singly or in
21 combination with one another.

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1 **Claim 7** recites an encoding system for determining position and position
2 changes of a moving member, comprising comprising:

- 3 • a row of encoder marks arranged along the moving member in a
4 generally regular manner to provide incremental position-change
5 information;
- 6 • at least one index marking in the form of a predefined pattern of encoder
7 marks which represents a disturbance of the regular encoder-mark
8 arrangement;
- 9 • a sensor arrangement viewing a section of the row of encoder marks and
10 arranged to provide a viewed pattern of the encoder-mark section;
- 11 • an analyzer arranged to analyze the viewed pattern to generate
12 incremental-position-change signals on the basis of the encoder marks
13 and an index signal in response to a detection of the predefined index
14 mark pattern, **wherein the analyzer verifies a correlation between the
15 viewed section and the index mark pattern to be higher than a
16 threshold as a condition of the index signal.**

17 The Applicant notes that the Ohno reference does not disclose an analyzer
18 that verifies a correlation between the viewed section and the index mark pattern
19 to be higher than a threshold as a condition of the index signal. Instead, Ohno fails
20 to disclose a range provided by a threshold within which the accuracy a
21 comparison of the viewed section and an index mark may be made.

22 The Patent Office has not suggested that Ohno discloses these aspects.

23 The Applicant asserts that the recited analyzer, that verifies a correlation
24 between the viewed section and the index mark pattern to be higher than a
25 threshold as a condition of the index signal, is novel with respect to the prior art of
record.

Accordingly, the Applicant respectfully requests that the §102 rejection of
Claim 7 be removed, and that Claim 7 be allowed to issue.

Claims 8—13 depend from Claim 7 and are allowable due to their
dependence from an allowable base claim. These claims are also allowable for

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1 their own recited features that, in combination with those recited in Claim 7, are
2 neither disclosed nor suggested in references of record, either singly or in
3 combination with one another.

4 **Claims 14, 34 and 35** are allowable for reasons similar to those seen above
5 with respect to the discussion of Claim 1 and Claim 7. Accordingly, the Applicant
6 respectfully requests that the §102 rejection of Claims 14, 34 and 35 be removed,
7 and that these claims be allowed to issue.

8 **Claims 15—19** depend from Claim 14 and are allowable due to their
9 dependence from an allowable base claim. These claims are also allowable for
10 their own recited features that, in combination with those recited in Claim 14, are
11 neither disclosed nor suggested in references of record, either singly or in
12 combination with one another.

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Traversal of the §103 Rejections

Claims 20—33 stand rejected under 35 U.S.C. §103(a) as being obvious over Ohno in view of US patent 6,155,669, hereinafter “Donahue.” In response, the Applicant respectfully traverses the rejection.

Claim 20 recites a printing device having an encoding system for determining position and position changes of a recording medium conveyor to determine the position of a recording medium placed on the conveyor, comprising:

- a sequence of encoder marks forming incremental patterns and at least one index pattern, wherein two subsequent incremental patterns are indicative of an incremental position-change of the conveyor and the index pattern is indicative of a reference position of the conveyor;
- a sensor arrangement viewing a section of the encoder-mark sequence, the length of which is greater than one position-change increment; and
- an analyzer arranged to analyze an encoder-mark pattern in the viewed section with regard to the incremental patterns and the index pattern and to generate, in response to a pattern match found, an incremental-position-change signal and an index signal, wherein the incremental-position-change signal and the index signal are generated only after confirming a correlation greater than selected thresholds between the viewed section and an incremental pattern or the index pattern, respectively.

As seen with the respect to the discussion of the Ohno reference and Claim 7, Ohno fails to disclose the use of threshold(s) when evaluating the correlation between the viewed section and expected patterns. Accordingly, the Applicant respectfully submits that the Ohno reference is deficient for at least these reasons.

The Applicant notes that the Patent Office did not cite Donahue as an example of a reference that remedies the above failings. In particular, Donahue was not cited for its disclosure, teachings or suggestion of thresholds, incremental

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1 position and/or absolute position. Moreover, a search of the specification and
2 drawings of Donahue does not reveal disclosure, teaching or suggestion of these
3 aspects. Accordingly, Donahue fails to remedy the failings of Ohno, who, it has
4 been shown, does not disclose, teach or suggest the creation of, or use of, a
5 threshold in confirming a correlation between the viewed section and an
6 incremental patter or the index pattern.

7 The Patent Office has cited Donahue for its disclosure of a page width
8 printer with plural print stations for the respective colors where each print station
9 includes its own code reader. The Patent Office has not cited Donahue as
10 disclosing, teaching or suggesting use of thresholds in evaluating the viewed
11 section with respect to incremental and absolute indexes.

12 Accordingly, the Applicant respectfully requests that the §103(a) rejection
13 of Claim 20 by removed, and that Claim 20 be allowed to issue.

14 Claims 21—24 depend from Claim 20 and are allowable due to their
15 dependence from an allowable base claim. These claims are also allowable for
16 their own recited features that, in combination with those recited in Claim 20, are
17 neither disclosed nor suggested in references of record, either singly or in
18 combination with one another.

19 Claims 25 and 29 are allowable for reasons similar to those seen above
20 with respect to the discussion of Claims 1, 7 and 20. Accordingly, the Applicant
21 respectfully requests that the §102 rejection of Claims 25 and 29 be removed, and
22 that these claims be allowed to issue.

23 Claims 26—28 depend from Claim 25 and are allowable due to their
24 dependence from an allowable base claim. These claims are also allowable for
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1 their own recited features that, in combination with those recited in Claim 25, are
2 neither disclosed nor suggested in references of record, either singly or in
3 combination with one another.

4 **Claims 30—33** depend from Claim 29 and are allowable due to their
5 dependence from an allowable base claim. These claims are also allowable for
6 their own recited features that, in combination with those recited in Claim 29, are
7 neither disclosed nor suggested in references of record, either singly or in
8 combination with one another.

9 **Conclusion**

10 The Applicant submits that all of the claims are in condition for allowance
11 and respectfully requests that a Notice of Allowability be issued. If the Office's
12 next anticipated action is not the issuance of a Notice of Allowability, the
13 Applicant respectfully requests that the undersigned attorney be contacted for
14 scheduling an interview.

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16 Respectfully Submitted,

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18 Dated: 3-10-2006

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